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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : C12N 15/63, A61K 39/12	A3	(11) International Publication Number: WO 96/40945 (43) International Publication Date: 19 December 1996 (19.12.96)
(21) International Application Number: PCT/CA96/00398 (22) International Filing Date: 7 June 1996 (07.06.96) (30) Priority Data: 08/476,397 7 June 1995 (07.06.95) US (60) Parent Application or Grant (63) Related by Continuation US 08/476,397 (CIP) Filed on 7 June 1995 (07.06.95) (71) Applicant (for all designated States except US): CONNAUGHT LABORATORIES LIMITED [CA/CA]; 1755 Steeles Av- enue West, North York, Ontario M2R 3T4 (CA). (72) Inventors; and (75) Inventors/Applicants (for US only): LI, Xiaomao [CA/CA]; 106 Glenmanor Way, Thornhill, Ontario L4J 3E5 (CA). EWASYSHYN, Mary, E. [CA/CA]; Apartment 1506, 120 Torresdale, Willowdale, Ontario M2R 3N7 (CA). SAMBHARA, Suryaprakash [CA/CA]; 50 Harness Circle, Markham, Ontario L3S 1Y1 (CA). KLEIN, Michel, H. [CA/CA]; 16 Munro Boulevard, Willowdale, Ontario M2P 1B9 (CA).	(74) Agent: STEWART, Michael, I.; Sim & McBurney, 6th floor, 330 University Avenue, Toronto, Ontario M5G 1R7 (CA). (81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the</i> <i>claims and to be republished in the event of the receipt of</i> <i>amendments.</i> (88) Date of publication of the international search report: 23 January 1997 (23.01.97)	
(54) Title: NUCLEIC ACID RESPIRATORY SYNCYTIAL VIRUS VACCINES (57) Abstract Vectors containing a nucleotide sequence coding for an F protein of respiratory syncytial virus (RSV) and a promoter for such sequence, preferably a cytomegalovirus promoter, are described. Such vectors also may contain a further nucleotide sequence located adjacent to the RSV F protein encoding sequence to enhance the immunoprotective ability of the RSV F protein when expressed <i>in vivo</i> . Such vectors may be used to immunize a host, including a human host, by administration thereto. Such vectors also may be used to produce antibodies for detection of RSV infection in a sample.		

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INTERNATIONAL SEARCH REPORT

Inte. onal Application No

PCT/CA 96/00398

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C12N15/63 A61K39/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C12N A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>JOURNAL OF GENERAL VIROLOGY 74 (12). 1993. 2559-2565. ISSN: 0022-1317, XP002018434 LOUNSBACH G R ET AL: "Binding of neutralizing monoclonal antibodies to regions of the fusion protein of respiratory syncytial virus expressed in Escherichia coli." see page 2560, paragraph "Expression of fragments of the RS virus F protein coding sequence"</p> <p>--- -/--</p>	1-56

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

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- * "E" earlier document but published on or after the international filing date
- * "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- * "O" document referring to an oral disclosure, use, exhibition or other means
- * "P" document published prior to the international filing date but later than the priority date claimed

* "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

* "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

* "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

* "&" document member of the same patent family

Date of the actual completion of the international search

13 November 1996

Date of mailing of the international search report

28.11.96

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INTERNATIONAL SEARCH REPORT

Int. .onal Application No

PCT/CA 96/00398

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>J INFECT DIS 159 (2). 1989. 255-264. CODEN: JIDIAQ ISSN: 0022-1899, XP002018435 WATHEN M W ET AL: "IMMUNIZATION OF COTTON RATS WITH THE HUMAN RESPIRATORY SYNCYTIAL VIRUS F GLYCOPROTEIN PRODUCED USING A BACULOVIRUS VECTOR." see page 256, paragraph 2 "Construction and selection of baculovirus recombinants containing the RSV F glycoprotein gene"</p> <p>---</p>	1-56
Y	<p>J VIROL 61 (2). 1987. 293-301. CODEN: JOVIAM ISSN: 0022-538X, XP002018436 WERTZ G W ET AL: "EXPRESSION OF THE FUSION PROTEIN OF HUMAN RESPIRATORY SYNCYTIAL VIRUS FROM RECOMBINANT VACCINIA VIRUS VECTORS AND PROTECTION OF VACCINATED MICE." see page 294, paragraph "Materials and Methods"</p> <p>---</p>	1-56
A	<p>WO,A,92 07940 (SAMAL SIBA KUMAR) 14 May 1992 see page 3, paragraph 2-3 see page 27, last line see page 60, SEQ ID NO: 18</p> <p>-----</p>	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA 96/00398

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 21-36
because they relate to subject matter not required to be searched by this Authority, namely:
Remark: Although claims 21-36 are directed to a method of treatment of the human or animal body the search has been carried out and based on the alleged effects of the composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

Information on patent family members

PCT/CA 96/00398

Form PCT/ISA/210 (patent family annex) (July 1992)